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CLAIMS

What is claimed is:

1. A method of balancing a workload across a plurality
5 of servers, the method comprising the steps of:
responsive to a request from a requesting client for
a distributed service, forwarding the request to a first
distributed service manager associated with the
requesting client;
10 determining whether the first distributed service
manager has information about the distributed service;
if the first distributed service manager has
information about the distributed service, retrieving the
information about the distributed service;
15 if the first distributed service manager does not
have information about the distributed service,
retrieving information about the distributed service from
a second distributed service manager and caching the
retrieved information at the first distributed service
20 manager; and
sending the retrieved information to the requesting
client.
2. The method of claim 1 wherein the first distributed
25 service manager has information about at least two
sources for the distributed service and selects a source
which will provide best service to the requesting client
based on network performance metrics.

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3. A method of balancing demand for networked services in a distributed data processing system, the method comprising the steps of:

5 initializing one or more local service managers within the distributed data processing system, wherein each local service manager provides access to networked services for clients within the distributed data processing system, and wherein each client is uniquely
10 associated with a local service manager;

 initializing one or more distributed service managers within the distributed data processing system, wherein each distributed service manager provides access to networked services to local service managers within
15 the distributed data processing system, and wherein each local service manager is uniquely associated with a distributed service manager;

 receiving, at a distributed service manager, a request for a networked service from a local service
20 manager;

 determining whether the distributed service manager has information about a networked service with one or more characteristics that match one or more parameters in the request for a networked service; and

25 returning information about a matched networked service from the distributed service manager to the local service manager.

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4. The method of claim 3 further comprising:

5 sending a request for a networked service from a
requesting client to a local service manager associated
with the requesting client; and

10 returning information about a matching networked
service from the local service manager to the requesting
client, wherein the matching networked service has
characteristics that match parameters in the request for
a networked service.

5. The method of claim 3 further comprising:

15 receiving a request for a networked service at a
local service manager; and

determining whether the local service manager has
information about a networked service with
characteristics that match parameters in the request for
a networked service.

20 6. The method of claim 5 further comprising:

if the local service manager has information about a
matching networked service, returning the information
about the matching networked service to the requesting
client;

25 if the local service manager does not have
information about a matching networked service,
forwarding the request for a networked service from the
local service manager to a distributed service manager
associated with the local service manager.

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7. The method of claim 3 further comprising:

if the distributed service manager has information about a matching networked service, returning the information about the matching networked service to the local service manager;

if the distributed service manager does not have information about a matching networked service, broadcasting the request for a networked service from the distributed service manager to all distributed service managers in the distributed data processing system;

receiving information about one or more matching networked services at the distributed service manager in response to the broadcast request; and

caching the received information about one or more matching networked services at the distributed service manager.

8. The method of claim 3 further comprising:

in response to a determination that the distributed service manager has information about two or more matching networked services, selecting a single networked service at the distributed service manager.

9. The method of claim 8 further comprising:

performing a load balancing operation at the distributed service manager to select the single networked service.

10. The method of claim 9 further comprising:

comparing network-related metrics during the load balancing operation.

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11. The method of claim 10 further comprising:

5 comparing one or more of network-related metrics
associated with a network path between a requesting
client and a providing server.

12. The method of claim 11 wherein the network-related
metrics are selected from a group comprising:
bottleneck-link speed, round-trip time, and hop count.

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13. An apparatus for balancing a workload across a
plurality of servers, the apparatus comprising:

15 forwarding means for forwarding, responsive to a
request from a requesting client for a distributed
service, the request to a first distributed service
manager associated with the requesting client;

 determining means for determining whether the first
distributed service manager has information about the
distributed service;

20 first retrieving means for retrieving, if the first
distributed service manager has information about the
distributed service, the information about the
distributed service;

25 second retrieving means for retrieving, if the first
distributed service manager does not have information
about the distributed service, information about the
distributed service from a second distributed service
manager;

30 caching means for caching retrieved information at
the first distributed service manager; and

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sending means for sending the retrieved information to the requesting client.

14. The apparatus of claim 13 further comprising:

5 selecting means for selecting a source which will provide best service to the requesting client based on network performance metrics when the first distributed service manager has information about at least two sources for the distributed service.

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15. An apparatus for balancing demand for networked services in a distributed data processing system, the apparatus comprising:

15 first initializing means for initializing one or more local service managers within the distributed data processing system, wherein each local service manager provides access to networked services for clients within the distributed data processing system, and wherein each client is uniquely associated with a local service manager;

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25 second initializing means for initializing one or more distributed service managers within the distributed data processing system, wherein each distributed service manager provides access to networked services to local service managers within the distributed data processing system, and wherein each local service manager is uniquely associated with a distributed service manager;

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first receiving means for receiving, at a distributed service manager, a request for a networked service from a local service manager;

5 first determining means for determining whether the distributed service manager has information about a networked service with one or more characteristics that match one or more parameters in the request for a networked service; and

10 first returning means for returning information about a matched networked service from the distributed service manager to the local service manager.

16. The apparatus of claim 15 further comprising:

15 sending means for sending a request for a networked service from a requesting client to a local service manager associated with the requesting client; and

20 second returning means for returning information about a matching networked service from the local service manager to the requesting client, wherein the matching networked service has characteristics that match parameters in the request for a networked service.

17. The apparatus of claim 15 further comprising:

25 first receiving means for receiving a request for a networked service at a local service manager; and

second determining means for determining whether the local service manager has information about a networked service with characteristics that match parameters in the request for a networked service.

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18. The apparatus of claim 17 further comprising:

third returning means for returning, if the local service manager has information about a matching networked service, the information about the matching networked service to the requesting client.

forwarding means for forwarding, if the local service manager does not have information about a matching networked service, the request for a networked service from the local service manager to a distributed service manager associated with the local service manager.

19. The apparatus of claim 15 further comprising:

fourth returning means for returning, if the distributed service manager has information about a matching networked service, the information about the matching networked service to the local service manager;

broadcasting means for broadcasting, if the distributed service manager does not have information about a matching networked service, the request for a networked service from the distributed service manager to all distributed service managers in the distributed data processing system;

second receiving means for receiving information about one or more matching networked services at the distributed service manager in response to the broadcast request; and

caching means for caching the received information about one or more matching networked services at the distributed service manager.

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20. The apparatus of claim 15 further comprising:

selecting means for selecting, in response to a determination that the distributed service manager has information about two or more matching networked
5 services, a single networked service at the distributed service manager.

21. The apparatus of claim 20 further comprising:

performing means for performing a load balancing
10 operation at the distributed service manager to select the single networked service.

22. The apparatus of claim 21 further comprising:

first comparing means for comparing network-related
15 metrics during the load balancing operation.

23. The apparatus of claim 22 further comprising:

second comparing means for comparing one or more of
network-related metrics associated with a network path
20 between a requesting client and a providing server.

24. The apparatus of claim 23 wherein the

network-related metrics are selected from a group
comprising: bottleneck-link speed, round-trip time, and
25 hop count.

25. A computer program product on a computer readable
medium for use in a data processing system for balancing
a workload across a plurality of servers, the computer
30 program product comprising:

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forwarding means for forwarding, responsive to a request from a requesting client for a distributed service, the request to a first distributed service manager associated with the requesting client;

5 determining means for determining whether the first distributed service manager has information about the distributed service;

first retrieving means for retrieving, if the first distributed service manager has information about the distributed service, the information about the distributed service;

10 second retrieving means for retrieving, if the first distributed service manager does not have information about the distributed service, information about the distributed service from a second distributed service manager;

15 caching means for caching retrieved information at the first distributed service manager; and

20 sending means for sending the retrieved information to the requesting client.

26. The computer program product of claim 25 further comprising:

25 selecting means for selecting a source which will provide best service to the requesting client based on network performance metrics when the first distributed service manager has information about at least two sources for the distributed service.

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27. A computer program product on a computer readable medium for use in a data processing system for balancing demand for networked services in a distributed data processing system, the computer program product comprising:

instructions for initializing one or more local service managers within the distributed data processing system, wherein each local service manager provides access to networked services for clients within the distributed data processing system, and wherein each client is uniquely associated with a local service manager;

instructions for initializing one or more distributed service managers within the distributed data processing system, wherein each distributed service manager provides access to networked services to local service managers within the distributed data processing system, and wherein each local service manager is uniquely associated with a distributed service manager;

instructions for receiving, at a distributed service manager, a request for a networked service from a local service manager;

instructions for determining whether the distributed service manager has information about a networked service with one or more characteristics that match one or more parameters in the request for a networked service; and

instructions for returning information about a matched networked service from the distributed service manager to the local service manager.

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28. The computer program product of claim 27 further comprising:

5 instructions for sending a request for a networked service from a requesting client to a local service manager associated with the requesting client; and

10 instructions for returning information about a matching networked service from the local service manager to the requesting client, wherein the matching networked service has characteristics that match parameters in the request for a networked service.

29. The computer program product of claim 27 further comprising:

15 instructions for receiving a request for a networked service at a local service manager; and

20 instructions for determining whether the local service manager has information about a networked service with characteristics that match parameters in the request for a networked service.

30. The computer program product of claim 29 further comprising:

25 instructions for returning, if the local service manager has information about a matching networked service, the information about the matching networked service to the requesting client;

30 instructions for forwarding, if the local service manager does not have information about a matching networked service, the request for a networked service

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from the local service manager to a distributed service manager associated with the local service manager.

31. The computer program product of claim 27 further comprising:

instructions for returning, if the distributed service manager has information about a matching networked service, the information about the matching networked service to the local service manager;

instructions for broadcasting, if the distributed service manager does not have information about a matching networked service, the request for a networked service from the distributed service manager to all distributed service managers in the distributed data processing system;

instructions for receiving information about one or more matching networked services at the distributed service manager in response to the broadcast request; and

instructions for caching the received information about one or more matching networked services at the distributed service manager.

32. The computer program product of claim 27 further comprising:

instructions for selecting, in response to a determination that the distributed service manager has information about two or more matching networked services, a single networked service at the distributed service manager.

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33. The computer program product of claim 32 further comprising:

instructions for performing a load balancing operation at the distributed service manager to select
5 the single networked service.

34. The computer program product of claim 33 further comprising:

instructions for comparing network-related metrics
10 during the load balancing operation.

35. The computer program product of claim 34 further comprising:

instructions for comparing one or more of
15 network-related metrics associated with a network path between a requesting client and a providing server.

36. The computer program product of claim 35 wherein the network-related metrics are selected from a group
20 comprising: bottleneck-link speed, round-trip time, and hop count.